

CLAIMS

1. A process for separation of two elements (1, 2) of
a structure containing the two elements brought into
5 adherent contact with one another by respective adherent
faces and with at least one interface (17, 217, 227, 317,
327);

10 wherein the process involves, before the elements
are brought into adherent contact, the carrying out of at
least one cavity, said cavity being made in at least one
of the elements and emerging respectively at the
interface, so as to enable passage in the cavity of
separation means; and wherein the process also involves,
15 at separation, the exertion of a force, in a localised
manner at the said interface (17), by application of the
said separation means, to initiate the separation of the
two elements starting at the interface, and to continue
the separation process, if applicable, until complete
20 separation of the two elements.

2. A process in claim 1, in which the separation of
the two elements is induced in one or more interfaces, in
a simultaneous or sequential manner.

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3. A separation process in claim 1, characterised in
that the separators contain means exerting a mechanical
action at the interface.

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4. A separation process as claimed in any of the claims 1 to 3, characterised in that the separators contain means exerting a fluid pressure at the interface.

5 5. A separation process as claimed in any of the claims 1 to 4, characterised in that the separators contain means exerting a chemical action on at least one of the elements at the interface.

10 6. A separation process as claimed in any of the claims 1 to 5, characterised in that the cavities are obtained by engraving.

15 7. A separation process as claimed in any of the claims 1 to 6, in which the adherence faces define at least one of the said interface zones, and in which the cavities (16) are made at the periphery of at least one element, in the adherence faces.

20 8. A separation process as claimed in any of the claims 1 to 6, characterised in that the cavities (26) are made in an inner region of at least one element, at the interface.

25 9. A process as claimed in any of claims 1 to 8, characterised in that at least one cavity penetrates through at least one element from side to side.

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10. A separation process in claim 1, characterised in that, where several interface zones are planned, the latter are arranged so as to initiate the separation at determined locations of the interface.

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11. A separation process in claim 3, characterised in that, with the fluid being a liquid fluid, the separators involve microwave excitation of the liquid fluid.

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12. A separation process in claim 1, characterised in that the two elements adhere to one another with a different adherence energy in different regions of an adherence interface between the elements, so as to initiate separation at a determined location of the adherence interface.

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13. A separation process in claim 1, for separating two elements of a structure having at least a first interface formed at the adherence faces of the two elements, and at least one second interface formed in at least one of the elements, in which a separation of the structure is induced at one of the first and second interfaces.

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14. A process in claim 13, for the separation of a structure with a bonding energy in the second interface lower than a bonding energy of the first interface, in

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which a separation of the structure in the second interface is induced.

15. A process in claim 13, in which, before the two elements are brought into contact, an embrittled zone is formed in at least one of the two elements forming the said second interface.

16. A process in claim 15, in which the embrittled zone is formed using an implantation technique or using a layer adherence technique.

17. A process in claim 15, in which an embrittled zone is formed at a shallow depth in one of the elements such that the second interface delimits a thin layer in the said element.

18. A device for separating two elements of a structure, adhering to one another by adherence faces at least one of which has cavities in an interface zone so as to be able to subject at least one of the adherence faces to the influence of a fluid and possibly to a mechanical action, where the device contains an enclosure with at least a first chamber (11, 35), called the high-pressure chamber, able to receive the fluid, and at least one second chamber (12, 13, 31, 32), called the low-pressure chamber, and where the enclosure is formed so as to receive the two adherent elements such that the cavities communicate with the high-pressure chamber.

19. A separation device in claim 18, characterised in that it also contains means forming a stop (14, 15; 34) on occurrence of deformation judged to be excessive of one and/or the other element of the structure when they are separated.

20. A separation device as claimed in either of claims 18 or 19, characterised in that the means for holding the structure contain at least one joint (7, 8; 27, 28) arranged between an element of the structure and a wall of the enclosure (4, 24).

21. A separation device in claim 20, in which at least one joint is arranged between a main face of at least one element in the form of a plate and a wall of the enclosure facing the main face.

22. A separation device in claim 20, in which at least one joint is arranged between the edge of at least one element in the form of a plate and a wall of the enclosure facing the edge.

23. A handle for transferring objects characterised in that it has an adherence face with cavities in at least some interface zones, and to which objects can adhere, and in that it also has means of access to interface zones in order to separate the objects from it.

24. A transfer handle in claim 23, characterised in that it has a plate, one face of which constitutes the adherence face, and where the plate is pierced with holes (54) which penetrate through, emerging at the interface zones and constituting the said means of access to the interface zones.

25. A transfer handle in claim 24, characterised in that the penetrating holes (54) are holes allowing a tool for separating the objects to pass through.

26. A transfer handle as claimed in any of claims 23 to 25, characterised in that the means of access to the interface zones are channels for the application of a pressurised fluid (104d, 140e, 140f, 104g, 104h, 104i).

27. A transfer handle in claim 26, containing channels for the application of a fluid made in the adherence face and formed according to a concentric circle pattern, a spiral pattern, a radial pattern, or a diagonal intersecting pattern between sectors of the adherence face.

28. A transfer handle in claim 26 in which the channels constitute cavities and/or link cavities (104d) made in the adherence face.

29. A process for transferring objects made on the surface of a first substrate (50), where the objects have

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an adherence face, and where the process comprises the following stages:

- the adherence faces of one or more objects (52) are brought into contact with the adherence face of a transfer handle (53) as claimed in any of claims 23 to 21,
- possibly, the first substrate (50) is thinned on the free face of this first substrate,
- at least one of the said objects (52) is brought into adherent contact with a receiving substrate (55),
- the said object is separated from the handle.

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